

XP-002288864

AN - 1998-020805 [03]

AP - DE19970624513 19970603; EP19970303786 19970603; [Based on EP0811479]
; JP19960163776 19960604; JP19960220465 19960802; CA19972206940
19970603; KR19970022997 19970604; US19970864079 19970528

CPY - TOFU

- TOFU

CT - No-SR.Pub

DC - A17 A85 F04 L03 P54 P73 X16

DS - AL AT BE CH DE DK ES FI FR GB GR IE IT LI LT LU LV MC NL PT RO SE SI

FS - CPI;GMP;EPI

IC - B01D69/12 ; B23B5/26 ; B32B5/24 ; B32B5/32 ; B32B27/12 ; B32B27/32 ;
C08J5/22 ; C08L23/06 ; C08L23/02 ; D04H13/00 ; H01M2/14 ; H01M2/16

IN - KAIMI N; KONO K; TAKITA K; YAMAGUCHI S; KAIMAI N

MC - A04-G01E A12-E06B F02-C01 F03-D01 F04-E L03-E01A

- X16-B01F1 X16-F02

PA - (TOFU) TONEN CHEM CORP

- (TOFU) TONEN KAGAKU KK

PN - DE69724513E E 20031009 DW200374 B32B5/24 000pp

- EP0811479 A2 19971210 DW199803 B32B5/24 Eng 016pp

- JP9326250 A 19971216 DW199809 H01M2/16 006pp

- JP10044348 A 19980217 DW199817 B32B27/32 007pp

- CA2206940 A 19971204 DW199916 B01D69/12 000pp

- KR98018123 A 19980605 DW199922 B01D69/12 000pp

- US5922492 A 19990713 DW199934 H01M2/16 000pp

- EP0811479 B1 20030903 DW200360 B32B5/24 Eng 000pp

PR - JP19960220465 19960802; JP19960163776 19960604

XA - C1998-007799

XIC - B01D-069/12 ; B23B-005/26 ; B32B-005/24 ; B32B-005/32 ; B32B-027/12 ;
B32B-027/32 ; C08J-005/22 ; C08L-023/06 ; C08L-023/02 ; D04H-013/00 ;
H01M-002/14 ; H01M-002/16

XP - N1998-015860

AB - EP-811479 A microporous polyolefin composite membrane comprises a microporous polyolefin membrane having a polyolefin nonwoven fabric laminated on at least one surface. The composite membrane has a thickness of 25-200 μ m, a porosity of 30-70%, an air permeability of 100-2,000 sec./100 cc and a surface opening area ratio of 50-90% on at least one of its outer surfaces. The microporous polyolefin membrane comprises a matrix polyolefin of weight average molecular weight (Mw) 50,000 or more, or a polyolefin mixture containing a polyolefin of this Mw, and having a porosity of 30-95%, an air permeability as above, an average open pore diameter of 0.001-1 μ m and a tensile strength at break of 500 kg/cm² or more. Also claimed is a method for producing a microporous polyolefin composite membrane as above.

- USE - Used as a battery separator (claimed) for non-aqueous batteries, e.g. lithium batteries.

- ADVANTAGE - The membrane has excellent permeability and mechanical strength, and a high safety factor as it will shut down at a low temperature if an unusually large amount of heat is generated due to a short circuit of the battery. The nonwoven fabric give it a high meltdown temperature. The membrane has a large pore opening to reduce the contact area between the membrane and the surface of electrodes

Best Available Copy

B9999 B4875 B4853 B4740 ; B9999 B5276-R ; B9999 B4091-R B3838 B3747 ;
B9999 B4171 B4091 B3838 B3747 ; K9665 ; N9999 N7192 N7023 ; N9999
N6177-R ; N9999 N6940 N6939 ;
- [004] 018 ; B9999 B5254 B5243 B4740 ; N9999 N6213 N6177 ; B9999
B4842 B4831 B4740 ;
A02 - [001] 018 ; G0033-R G0022 D01 D02 D51 D53 ; H0000 ; H0011-R ;
P1150 ;
- [002] 018 ; R00326 G0044 G0033 G0022 D01 D02 D12 D10 D51 D53 D58 D82 ;
H0000 ; H0011-R ; P1150 ; P1161 ;
- [003] 018 ; ND01 ; ND07 ; Q9999 Q7818-R ; Q9999 Q7341 Q7330 ;
K9416 ; K9905 ; K9574 K9483 ; K9687 K9676 ; K9698 K9676 ; K9712
K9676 ; Q9999 Q8060 ; B9999 B5243-R B4740 ; B9999 B5221 B4740 ;
B9999 B4875 B4853 B4740 ; B9999 B5276-R ; B9999 B4091-R B3838 B3747 ;
B9999 B4171 B4091 B3838 B3747 ; K9665 ; N9999 N7192 N7023 ; N9999
N6177-R ; N9999 N6940 N6939 ;
- [004] 018 ; K9745-R ; B9999 B5094 B4977 B4740 ; B9999 B5607 B5572 ;
K9518 K9483 ;
A03 - [001] 018 ; R00326 G0044 G0033 G0022 D01 D02 D12 D10 D51 D53 D58 D82 ;
H0000 ; P1172 P1161 ; P1150 ;
- [002] 018 ; R00326 G0044 G0033 G0022 D01 D02 D12 D10 D51 D53 D58 D82 ;
H0011-R ; P1252 ; P1150 ;
- [003] 018 ; B9999 B4831-R B4740 ; B9999 B3601 B3554 ; K9745-R ;
K9518 K9483 ;
- [004] 018 ; ND01 ; ND07 ; Q9999 Q7818-R ; Q9999 Q7341 Q7330 ;
K9416 ; K9905 ; K9574 K9483 ; K9687 K9676 ; K9698 K9676 ; K9712
K9676 ; Q9999 Q8060 ; B9999 B5243-R B4740 ; B9999 B5221 B4740 ;
B9999 B4875 B4853 B4740 ; B9999 B5276-R ; B9999 B4091-R B3838 B3747 ;
B9999 B4171 B4091 B3838 B3747 ; K9665 ; N9999 N7192 N7023 ; N9999
N6177-R ; N9999 N6940 N6939 ;
A04 - [001] 018 ; R00326 G0044 G0033 G0022 D01 D02 D12 D10 D51 D53 D58 D82 ;
H0000 ; P1218 P1161 ; P1207 P1161 ; S9999 S1387 ; S9999 S1581 ;
S9999 S1365 ; P1150 ;
- [002] 018 ; ND01 ; ND07 ; Q9999 Q7818-R ; Q9999 Q7341 Q7330 ;
K9416 ; K9905 ; K9574 K9483 ; K9687 K9676 ; K9698 K9676 ; K9712
K9676 ; Q9999 Q8060 ; B9999 B5243-R B4740 ; B9999 B5221 B4740 ;
B9999 B4875 B4853 B4740 ; B9999 B5276-R ; B9999 B4091-R B3838 B3747 ;
B9999 B4171 B4091 B3838 B3747 ; K9665 ; N9999 N7192 N7023 ; N9999
N6177-R ; N9999 N6940 N6939 ;
- [003] 018 ; K9745-R ; B9999 B5094 B4977 B4740 ; N9999 N5970-R ;
N9999 N5878 ; N9999 N5812-R ; N9999 N6086 ; N9999 N5925 N5914 ;
N9999 N6882 N6655 ; N9999 N6780-R N6655 ; N9999 N6199 N6177 ; B9999
B4897 B4740 ; B9999 B5163 B5152 B4740 ; K9518 K9483 ;
- [004] 018 ; A999 A497 A486 ;
- [005] 018 ; G3474 D01 D02 D50 ; A999 A395 ; S9999 S1376 ;